DATABASE SYSTEM

ASSIGNMENT # 01

NAME:-

Muhammad Waleed

ROLL NO:-

110839

FIGURE P 1.1

Problem 1:-

The file structure in Figure P1.1 contains 7 records. Each record contains the following fields

- Project_code
- Project_Manager
- Manage_Phone

- Manager_Address
- Project_Bid_Price

Thus each record has 5 fields

Problem 2:-

The city information is embedded with Manager_Address field, which makes it difficult to filter and sort data by city. Extracting a listing of projects based on city would require manual text parsing or complex string manipulation which is inefficient.

Solution:-

To resolve this, the database should be normalized by seperating the manager's address into distinct fields

- Street Address

- City
- State
- ZIP Code

Problem 3:-

Required Changes:-

- Seperate the manager's name into First_Name and Last_Name.
- Extract the area code from the phone number
- Store city, State, and ZIP Code in seperate fields

The new structure would look like

Project_Code	Project_Manager_First	Project_Manager_last	Area_code
25-42	David	Parker	904

Problem 4:-

Data Redundancies:-

In fields of PROJECT_MANAGER, MANAGER-PHONE & MANAGER_ADDRESS data has seperated for

multiple times

Anomalies:-

- **Update Anomaly:-**

If a manager's phone number changes, it must be updated in multiple times.

- **Insertion Anomaly:-**

New projects cannot be assigned a manager without including redundant address and phone Data.

- **Deletion Anomaly:-**

Deleting a project would remove all traces of a manager if they manage only one project.

FIGURE P 1.5

Problem 5:-

The Emp_Name & Emp_Phone fields are repeated multiple times which can become a serious data redundancy.

The Job_Code & Job_Chg_Hour fields are also repeated.

Due to these redundancy storage requirements can be increased & can read to other issues too.

Problem 6:-

To reduce the data redundancy Emp_Name & Emp_Phone & make a seperate field of Emp_ID which consists of other 2.

Problem 7:-

- Proj_Num, Proj_Name
- Emp_Name, Emp_Phone

- Job_Code, Job_CHG_Hour
- Proj_Hours.

Problem 8:-

Employee Table: Emp_ID, Emp_Name, Emp_Phone.

Project Table: Proj_Num, Proj_Name

Job Table: Job_Code, Job_Description.

Assignment Table (to link employees, projects & jobs): Emp_ID Proj_Num, Job_Code, Proj_Hours